AMSAT News Service Weekly Bulletins
Issue: ANS-209
Date: 2019-07-28
Sources: amsat-ans-2019-ans-209-weekly-hyperkitty-d84a4bc511.txt

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AMSAT NEWS SERVICE
ANS-209

The AMSAT News Service bulletins are a free, weekly news and information service of AMSAT North America, The Radio Amateur Satellite Corporation. ANS publishes news related to Amateur Radio in space including reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

The news feed on http://amsat.org publishes news of Amateur Radio in space as soon as our volunteers can post it.

Please send any amateur satellite news or reports to:
ans-editor at amsat dot org.

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ANS-209 AMSAT News Service Weekly Bulletins

AMSAT News Service Bulletin 105.01
>From AMSAT HQ KENSINGTON, MD.
July 28, 2019
To All RADIO AMATEURS
BID: $ANS-209.01

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CAS-7B carries a 100 mW CW telemetry beacon at 435.715 MHz and an FM transponder with an uplink of 145.900 MHz (16 kHz bandwidth, no tone required) and a downlink of 435.690 MHz (100 mW).

Many QSOs around the world have been reported via the FM transponder. Reports indicate the transponder requires a considerable amount of EIRP to access and that the satellite is spinning fast causing rapid fading of signals.

More information about CAS-7B can be found at https://www.amsat.org/camsat-cas-7b-is-ready-for-june-launch/

[ANS thanks CAMSAT and JA0CAW for the above information.]

Upcoming ARISS SSTV Events

ARISS Russia plans to activate the MAI-75 SSTV experiment on July 29 with images starting at 13:15 UTC ending at 21:25 UTC, then again starting July 30 at 13:50 UTC ending 19:30 UTC. Downlink frequency is 145.800 MHz FM using the PD-120 SSTV mode.

ARISS plans to commemorate Owen Garriott's outstanding accomplishments with ham radio in space during an ISS SSTV event starting 09:40 UTC on August 1 and ending 18:15 UTC on Aug 4. Downlink freq will be 145.800 MHz FM using the PD-120 SSTV mode.

However, there is a possible switch out in images for SSTV event scheduled for August 1-4. This may result in planning an additional SSTV event for the end of August that would feature the Owen Garriott commemorative images at that time. We expect an update on this after July 26th

[ANS thanks ARISS for the above information.]

AMSAT-Chile developing CESAR-1 FM / digital satellites

AMSAT-CE is designing and building five satellites, to be used by radio amateurs around the world, which will allow a series of scientific experiments in the field of digital communications, as well as gravimetric and orbitgraphic studies.

Of these five satellites, one will be the engineering prototype, three will be flight units, and the remaining one will be used to check or replicate on the ground the operation of the units that are in space.

AMSAT-CE has also promoted the installation of three earth stations, in Iquique, Temuco and Pto. Montt.

Technical characteristics

*CESAR-1 is of microsat technonogy (cube shape, 23 cm per edge).

*The satellite reception frequencies will be in the 145 MHz band (5 channels) and 1,575 MHz (GPS).

*The satellite transmission frequencies will be in the 436 MHz band (2 channels).

*The modulation will be FSK (AX.25 9.6 kbps) or narrowband FM.

*The magnetic stabilization will be by permanent magnets.

*It will have a magnetic brake (the rotation due to the photonic spin will be stopped by seven bars of hydrogen steel, which will cut lines of force from the earth's magnetic field).

*The estimated useful life is 10 years.

*The mass will be approximately 12 kg

*The period will be 100 minutes (that's about 14 revolutions a day).

*The satellite platform consists of 5 modules made of space aluminum AL6061-T6.

*The electrical energy will be stored in a Saft NiCd battery, made up of 8 batteries of 7 Ah each.

*The solar cells will be Spectrolab, triple junction (GalnP2-GaAs-Ge), or the like.

Contributions of the CESAR-1 Project to the Country

AMSAT-CE satellites will be added to the projects already undertaken by the Chilean Air Force (FASAT) and the University of Chile (SUCHAI), but they have as their main characteristic that they are the first ones that are being designed and built entirely in the country, which constitutes a huge challenge, and a scientific and technological contribution.

Among the benefits that the country and the amateur radio can obtain from AMSAT-CE satellites are:

- Education (interest young people in space radiocommunications)
- Support in emergency situations
- Scientific experimentation (in the frame for experiments)
- Boosting a national aerospace industry
- Experimentation with the Internet
- National Amateur Radio Unit, and
- International recognition for the country.

Experiments

The CESAR-1 satellite will have five main (E) experiments:

E1 A digital transponder between two earth stations, to be used in real time, during the period in which both are being illuminated by the satellite (radio-packets in AX.25 at 9,600 kbps).

E2 A digital transponder between two earth stations, to be used in deferred time, as an electronic message box (Store & forward with radio-packets in AX.25 at 9.6 kbps).

E3 An analog repeater that will allow two earth stations that are being illuminated by the satellite to be linked, to broadcast audio (voice) in real time, in FM mode.

E4 Communication between two terrestrial repeaters, with link to the satellite, which will allow long distance, but temporary, calls to low-power portable stations (voice, FM, 147 MHz access), and

E5 An on-board GPS receiver, which will collect information for gravimetric and orbitgraphic research.

The orbit of CESAR-1 will be low, polar and heliosynchronous (about 800 km high).

*In any case, given the time elapsed, it is possible that both the experiments and the electronic part considered for them must be modernized.

Cost of the Project and its Financing

The cost of the project, in money, amounts to about USD 700,000 (necessary for the construction of five satellites, launch of one, implementation of two command and control stations, and three terrestrial repeaters).

Of that amount, around USD 300,000 have already been contributed by external sponsors, and by members of the AMSAT-CE Foundation.

However, we have not yet been able to obtain the financing of the remaining USD 400,000

Additionally, and conservatively, we estimate that the project requires some 36,000 man-hours of managers and specialists.

Much of those 36,000 hours have already been or are being voluntarily contributed by the AMSAT-CE partners.

Essentially, the monetary resources that are still missing are needed to finance the solar cells of CESAR-1, hire professional services to finish the construction of what is pending, and cover the costs of the tests and the first launch.

Project status

Although it is a radio amateur project, it does not cease to correspond to a professional and complex project.

But the more than 20 years we have been working - without reaching the goal - have exhausted some of our partners, and this has generated a shortage of volunteers.

It has not been easy to finish the first satellite - which should have flown in the late 1990s - because in Chile there is still not enough awareness about the possibilities offered by space activity to the country.

Despite this, the construction of CESAR-1 is quite advanced (more than 70%):

-5 mechanical satellite structures are built.
-8 UHF transmitters are finished, and aligned in their working frequencies.
-The sources of power are finished.
-The receivers have an advance of 90%.
-The GPS experiment has an advance of 70%.
-In the OBC with its EDAC and RAM disk, the software needs to be refined.
-The international coordination of frequencies in the ITU was concluded, but today it would have to be reactivated, for the time elapsed.
-There are, yes, the photovoltaic cells, the assembly in Chile and the final tests (which will probably be done in Brazil).
-It is also necessary to reactivate the obtaining of the pitcher.

Website: https://www.amsat-ce.org/proyecto-cesar

[ANS thanks AMSAT-CE for the above information.]

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LO-94 Lunar Impact Expected on July 31st

Here is the LO-94 (DSLWP-B) UHF plan for the following days:

29 Jul 00:15 to 02:15
29 Jul 04:30 to 06:30
29 Jul 20:00 to 22:00
30 Jul 05:30 to 07:30
30 Jul 16:20 to 18:20
31 Jul 06:30 to 08:30
31 Jul 13:24 to 15.24
1 Aug 05:30 to 07:30

All time in UTC. GMSK on both freq & JT4G on 435.4. JT4G repeater message on 436.4 TBD.

Lunar impact expected to be at about 31 Jul 14:20. Later windows for backup.

SSDV album: http://lilacsat.hit.edu.cn/dashboard/pages_en/pics-b.html

Online JT4G telemetry forwarder:
http://lilacsat.hit.edu.cn/dashboard/pages_en/jt4g_forwarder.html
JT4G telemetry display:
http://lilacsat.hit.edu.cn/dashboard/pages_en/jt4g.html
GMSK telemetry:
http://lilacsat.hit.edu.cn/dashboard/pages_en/telemetry-b.html

[ANS thanks Wei Mingchaun, BG2BHC, Harbin Institute of Technology, for the above information]

Changes to AMSAT-NA TLE Distribution for July 25, 2019

The following Amateur Radio satellites have decayed from orbit and have been removed from this week's TLE distribution.

NJUST-1 - NORAD CAT ID 42722 - Decayed 07/20/2019 (per Space-Track)
AOXIANG-1 - NORAD CAT ID 42735 - Decayed 06/26/2019 (per Space-Track)

The following Amateur Radio satellite has been added to this week's TLE distribution.

CAS-7B - TEMPORARY CAT ID 99999 (This CAT ID will be changed to a permanent ID later.)
The initial TLE supplied by Alan Kung, BA1DU on July 25, 2019 on AMSAT-BB.

[ANS thanks Ray Hoad, WA5QGD, AMSAT Orbital Elements Manager for the above information.]

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Upcoming Satellite Operations

+J6 St Lucia, (FK94) July 21 – August 3, 2019
Frank, K3TRM, will be operating as J6/K3TRM from Gros Islet, St. Lucia (FK94mb) between July 21 – August 3, 2019. Activity will be on 40-6M using SSB, CW, and Digital (RTTY & FT8) and satellite. More info available on Frank's QRZ page: https://www.qrz.com/db/J6/K3TRM and Twitter feed: https://twitter.com/k3trm

+CY9 St. Paul Island (FN97) – July 31 to August 8, 2019
CY9C will be on St. Paul Island July 31st through August 8th. This is an all bands/mode dxpedition, with EME and Sats as well. More info available at http://cy9c.com/index.html.

+West Yellowstone (DN44) August 2-3, 2019
Dennis, N7EGY, will be attending a family reunion August 2-3, and should be able to sneak away for a few FM passes. Keep an eye on Dennis' Twitter feed for further updates: https://twitter.com/n7egy1

+AZ NV UT (DN25-DN28, DM37-DM38, DM46-DM47) August 3-10, 2019
Ian, K5ZM, will be wandering through the Southwest August 3rd – 10th, mostly operating as W3ZM/7:

Aug 03: NV DM25/DM26 line
Aug 04: AZ DM36
Aug 06: NV and UT DM27/DM28/DM37/DM38
Aug 07: AZ DM46 + UT DM47
Aug 10: NV DM25/DM26 line
Aug 05 & 08: non ham stuff = K5ZM
Aug 09: TBD!

Watch for updates on Ian's Twitter feed: https://twitter.com/k5zm_

+Florida Keys (EL95) August 4-11, 2019
Philippe, EA4NF will be operating from EL95 (Key Largo and Brickell Key) as KC3NSG, from August 4 to 11, 2019. FM and Linears. QSL via LoTW. Keep an eye on Philippe's Twitter feed for further updates: https://twitter.com/EA4NF_SAT

+Washington Invasion (CN96/96 & DN06/07/17/17) – August 9-10, 2019
Casey, KI7UNJ, will be heading North to invade the State of Washington, August 9th and 10th. Keep an eye on Casey's Twitter feed for specific pass announcements: https://twitter.com/KI7UNJ

+FP - St Pierre et Miquelon (GN16) – August 10-18, 2019
A DXpedition is planned to St Pierre et Miquelon, August 10th through the 18th. The team will operate as T05M will from Ile aux Marins on 6-160m, but there is a possibility of some FM Satellites. Keep an eye on their website for updates: http://fp2019.net/

+Santa Rosa Island, CA (CM93) – August 12-14, 2019
Ron, AD0DX, is heading back to Santa Rosa Island, August 12th -14th. When not distracted by the feathered-birds, Ron will be on FM and linear satellites as W6R. Keep an eye on Ron's Twitter feed for updates at the dates get closer. https://twitter.com/ad0dx

+Goose Bay, Labrador (FO93) August 12-14, 2019
Chris, VE3FU, will be visiting family / friends and maintenance of his HF remote station in FO93, but he should be on the FM sats as VO2AC. Chris will try to post here before each pass, so keep an eye

on his Twitter feed: https://twitter.com/ChrisVE3FU

+6Y - Jamaica (FK18) August 12-19, 2019
Philippe, EA4NF will be operating from JAMAICA (IOTA NA-097 – Grid FK18) in Satellite with the special call 6Y4NF from August 12 to 19, 2019. QRV Satellite in FM and SSB. QSL via LoTW. Keep an eye on Philippe's Twitter feed for further updates : https://twitter.com/EA4NF_SAT.

Remember to check out W3ZM On the Road for additional upcoming activations!

https://www.amsat.org/events/was-w3zm/

[ANS thanks Robert Bankston, KE4AL, for the above information.]

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Contact Martha at the AMSAT office for additional student
membership information.

73,

This week's ANS Editor,

Paul Stoetzer, N8HM
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